

AperTO - Archivio Istituzionale Open Access dell'Università di Torino

Post-traumatic growth, distress and attachment style among women with breast cancer

This is a pre print version of the following article:

Original Citation:

Availability:

This version is available <http://hdl.handle.net/2318/1630467> since 2018-03-26T11:54:11Z

Published version:

DOI:10.1080/07347332.2017.1289291

Terms of use:

Open Access

Anyone can freely access the full text of works made available as "Open Access". Works made available under a Creative Commons license can be used according to the terms and conditions of said license. Use of all other works requires consent of the right holder (author or publisher) if not exempted from copyright protection by the applicable law.

(Article begins on next page)

This is the author's final version of the contribution published as:

Romeo, Annunziata; Ghiggia, Ada; Tesio, Valentina; Di Tella, Marialaura; Torta, Riccardo; Castelli, Lorys. Post-traumatic growth, distress and attachment style among women with breast cancer. JOURNAL OF PSYCHOSOCIAL ONCOLOGY. - (-) pp: 1-14.
DOI: 10.1080/07347332.2017.1289291

The publisher's version is available at:

<https://www.tandfonline.com/doi/full/10.1080/07347332.2017.1289291>

When citing, please refer to the published version.

Link to this full text:

<http://hdl.handle.net/>

Post-traumatic growth, distress and attachment style among women with breast cancer.

Post-traumatic growth in breast cancer women

Annunziata Romeo¹, Ada Ghiggia¹, Valentina Tesio^{1*}, Marialaura di Tella¹, Riccardo Torta^{2,3}
and Lorys Castelli^{1,2}.

¹ Department of Psychology, University of Turin, Via Po 14, 10123 Turin, Italy.

²Department of Neuroscience, University of Turin, Corso Bramante 88/90, 10126 Turin, Italy.

³“Clinical Psychology Unit”, “Città della Salute e della Scienza” Hospital, Corso Bramante
88/90, 10126 Turin, Italy.

*Corresponding author:

Valentina Tesio: valentina.tesio@unito.it

Postal address: Department of Psychology,

University of Turin, Via Po 14, 10123 Turin, Italy.

Abstract

We investigated the level of Post-traumatic growth (PTG) and its relationship with clinical and psychological variables in a sample of 108 females breast cancer survivors. The data were collected through the PTG Inventory, the Relationship Questionnaire, the Hospital Anxiety and Depression Scale and the Distress Thermometer. Women with higher depressive symptoms presented lower levels of PTG than women without. Moreover, women who had undergone combined treatment presented higher levels of PTG than women who had not. In conclusion, the presence of depressive symptoms in the follow-up period was found to negatively interfere with the possibility of developing psychological growth.

Key words: Post-traumatic growth, Breast cancer, Distress, Attachment style, Anxiety/Depression

Introduction

Cancer is one of the main traumatic and stressful events that can generate negative consequences on psychological wellbeing. These consequences, whether post-traumatic symptoms, distress or loss of meaning, have been widely studied in many researches (Cordova et al., 1995; Cohen M., 2002; Palmer et al., 2004).

In the context of breast cancer (BC), depression and anxiety have been linked to increased symptom burden, decreased quality of life and poorer clinical outcomes. Moreover, studies have evidenced that distress is influenced by disease severity, time since diagnosis, treatment modality and cancer recurrence (Fann et al., 2008; Wong-Kim and Bloom, 2005).

Over the last twenty years, researchers have focused their interest on the positive effects of stressful experiences. Tedeschi and Calhoun (1995) developed a new psychological construct, Post-traumatic growth (PTG), to describe these positive outcomes.

PTG is defined as ‘positive psychological change experienced as a result of the struggle with highly challenging life circumstances’. It is determined through subjective perception of change, such as changed priorities and acquired cognition of new possibilities, greater appreciation of life, a deeper spiritual dimension, better interpersonal relationships, and a greater sense of personal strength. PTG seems to emerge among other factors, such as emotional sharing, social support, and cognitive processing (Tedeschi and Calhoun, 2004; Calhoun and Tedeschi, 2006). Paradoxically, some studies have highlighted that PTG and distress can co-occur, suggesting that they are not mutually exclusive (Soo et al., 2015; Cordova et al., 2001; 2007). Identifying the correlates of PTG appears to be very important in order to increase knowledge about it and, perhaps to promote PTG itself through specific interventions.

In a recent review (Kolokotroni et al., 2014) referring to the socio-demographic variables, age at breast cancer diagnosis was found to be an important factor related to PTG. In four studies, younger women were found to be more likely to report higher levels of PTG than older women (Bellizzi et al., 2003; 2007; Gallagher-Ross, 2011; Manne et al., 2004). One recent study

conducted on 1227 patients with breast cancer (Mu-Lan Wang et al., 2014) identified different factors that could influence PTG. Specifically, the authors found that PTG was positively associated with education level; with regard to work status, that retirees had the highest PTG; and that physical exercise was the most important variable positively associated with PTG in breast cancer survivors.

Beyond the socio-demographical variables, more specific clinical factors also seemed to be involved in PTG, such as cancer severity, time since diagnosis and treatment. With regard to time since diagnosis, one study (Weiss J., 2004) found that a higher level of PTG was associated with a period closer to the time of diagnosis, while Hoover S. (2005) found that a longer time since diagnosis was related with a greater appreciation of life, one of the core PTG features. Finally, Bellizzi and colleagues (2003) underlined that time since diagnosis did not predict PTG level. With regard to treatment, Mols and colleagues (2009) found in 183 BC patients that radiotherapy was negatively associated with post-traumatic growth, while Lelorain and colleagues (2010) underlined that chemotherapy was positively associated with the PTG level, women with chemotherapy treatment perceiving more growth than women without.

Attachment style is considered a predictor of psychological adjustment for individuals with chronic illnesses (Turner-Cobb et al, 2002; Hamama-Raz and Solomon, 2006). Although PTG is not strictly conceptualized as an adjustment to a traumatic event, but rather as a response to a traumatic event, it is well established that insecure attachment makes individuals more vulnerable to negative outcomes, while secure attachment protects individuals from developing negative outcomes after trauma (Woodhouse et al., 2015).

Previous studies analyzed the association between attachment style and the development of PTSD considering different traumatic events (not a diagnosis of cancer), and suggested that securely attached individuals may be more likely to be able to resolve traumatic experiences (eg. war) and to experience positive changes (in Israeli undergraduates (Mikulincer et al., 2006) and political prisoners (Salo et al., 2005). Another study reported a negative association between

attachment-avoidance and perceived PTG in a sample composed of university staff and students (Gizem Arikan et al., 2016). However, to date only two studies have examined the relationship between attachment style and PTG following a diagnosis of cancer. In the first study, on 54 cancer survivors (46.3% BC survivors), Schmidt and colleagues (2011) found that secure attachment was significantly associated with active coping, while insecure attachment and social support were unrelated to PTG. In the second, on 152 patients with breast or prostate cancer, Tanyi Z. and colleagues (2015) found that the dismissive attachment style predicted fewer scores on the “Personal Strength” and “Relating to Others” subscales of PTG. Starting from this empirical evidence, this study aims to examine the level of PTG after a BC diagnosis in Italian BC survivors. Specifically, we addressed two aims. The first was to investigate the relationship between PTG and socio-demographic and related disease-variables in BC survivors.

We started from the hypothesis that younger women with a higher educational level and with a partner tend to present greater psychological growth. We also hypothesized that patients who received only hormonal-therapy (HT) could experienced a lower level of PTG than patients who experienced combined treatment (CT) with hormonal-, chemo- and/or radio-therapy. The second was to analyze the possible relationships between attachment style, distress and PTG, starting from the hypothesis that women with lower distress levels in the follow-up period and secure attachment are more likely to experience psychological growth than women with higher distress levels and insecure attachment.

Material and Method

Participants

The participants were recruited in the period from March 2014 to December 2015 in the “Clinical and Cancer Psychology Unit” of the “Città della Salute e della Scienza” Hospital of Turin, Italy.

We telephoned 317 consecutive women from a database of patients being followed up, inviting them to take part in this study. 146 did not answer the phone or refused to take part in the study, while 2 had died. Of the 169 who expressed interest in participating, 38 did not come to the planned appointment with the clinical psychologist while 23 did not meet the inclusion criteria (see Table 1 – flow chart).

Table 1 about here

Specifically, the inclusion criteria were:

- Diagnosis of breast cancer;
- Female gender;
- Age ≥ 18 years;
- Treatment completed (chemo- and/or radio-therapy) at least one year before;
- No current clinically relevant psychiatric disorders or cognitive deficits.

The final sample consisted of 108 females (mean age years=59.3; SD=7.8 ; range= 40-72), diagnosed with breast cancer who had undergone and completed chemo- and/or radio-therapy treatment at least one year before. The mean time since BC diagnosis was 4.09 (SD 2.9) years. With regard to the treatment, the sample was devised into two subgroups: those who had received combined treatment (CT) with chemotherapy, radiotherapy and hormonal therapy (68%), and those who had received only hormonal therapy (HT) (32%), after surgery (Table 2)

Table 2 about here

Procedures

In the telephone call, an appointment was made for participants to complete a questionnaire packet in the presence of a clinical psychologist. All participants completed the written informed consent and self-report paper questionnaires, which took approximately 20 minutes to complete. In addition to demographic (age, employment, years of education and marital status) and disease-related clinical information (years since diagnosis, surgery and types of treatments, possible recurrence, daily social and work activities-*Karnofsky Performance Status*), psychological data were collected by administering four self-report scales evaluating distress in a follow-up period (*Distress Thermometer*, *Hospital Anxiety and Depression Scale*), post-traumatic growth (*Post Traumatic Growth Inventory*) and attachment style (*Relationship Questionnaire*). Below is a list of the psychological scales administered to the BC patients.

- Psychological distress

The *Distress Thermometer (DT)* (Roth et al,1998;Hoffman et al.,2004; Castelli et al.,2013) is a screening instrument, usually used in a medical and clinical setting, to measure psychological distress. It is composed of a single item with scores on an 11-point scale ranging from 0 (no distress) to 10 (high distress) with a cut-off fixed at 4 points. Participants are invited to mark the number (from 0 to 10) which best describes their emotional discomfort during the previous week, including the current day.

The *Hospital Anxiety and Depression Scale (HADS)* (Zigmond and Snaith, 1983) is a self-report instrument for evaluating depression and anxiety levels in patients with organic disease. It is composed of 14 items representing two subscales: anxiety (HADS-A) and depression (HADS-D), which are scored on a 4-point scale ranging from 0 (never) to 3 (often right). The cut-off of each subscale is fixed at 8 points. There is also a total HADS score which ranges from 0-42 with a cut-off of 15, with high scores indicating a worse condition.

- *Post-Traumatic Growth*

The *Post-Traumatic Growth Inventory* (PTGI) (Prati and Pietrantonio, 2014) is a self-report instrument of positive changes after a traumatic experience. It consists of 21 items in five subscales: Relating to Others, New Possibilities, Personal Strength, Spirituality, and Appreciation of Life, and a total Post-traumatic Growth Score which ranges from 0-105, with high scores indicating positive growth. The PTGI is scored with a 6-point Likert type-scale ranging from 0 (no change) to 5 (high change). This instrument has been used successfully in previous studies with cancer patients and cancer survivors.

- *Attachment style*

The *Relationship Questionnaire (RQ)* (Bartholomew and Horowitz, 1991) is designed to measure adult attachment style, and is characterized by 4 items made up of four short paragraphs, each describing one of four attachment styles: secure, preoccupied, dismissing-avoidant and fearful-avoidant.

Attachment Security is defined as a positive self-image and a sense of being worthy of love, combined with a positive expectation that others will be generally accepting and responsive in times of need. *Preoccupation* (anxious-ambivalence) is defined as a negative self-image and a sense of un-lovability, combined with a positive evaluation of others (in terms of their strength and independence). The two *avoidant* strategies are: 1) *dismissing-avoidance*, representing a positive self-image and a sense of lovability, combined with a negative expectation of significant others as demanding, clingy, and dependent; and 2) *fearful-avoidance*, representing a negative self-image combined with skepticism about whether significant others can be trusted to be loving and available.

The participants are asked to express their degree of correspondence to each prototype on a 7-point scale. The RQ aims to obtain continuous ratings of each of the four attachment patterns in

order to show a detailed profile of an individual's attachment behavior. The highest of the four attachment prototype ratings can be used to classify participants in an attachment category. In other words, the RQ takes both a dimensional approach to attachment, asking “how much” security, preoccupation, dismissing-avoidance or fearful-avoidance characterizes an individual, and a category approach to attachment in order to individualize the prototypical style.

Data Analysis

The data were analyzed with the Statistical Package for Social Science (SPSS; 22 version). Descriptive statistics, Pearson correlations analysis and independent-sample t-tests were run. Correlations were conducted to investigate associations between demographic and disease-related variables and PTGI scores, while independent-sample t-tests were run to compare the mean scores of subgroups of patients. P values $\leq .05$ were considered statistically significant.

Results

The demographic and clinical characteristics of the sample are listed in Table 2.

Psychological distress

The HADS results showed that 26% of women presented a clinical relevant level of depressive symptoms, and 36% a clinical relevant level of anxiety. The majority of the women (68%) presented high levels of psychological distress (DT scores). (See Table 3)

Table 3 about here

Post-Traumatic Growth

Overall, the participants showed a mean PTGI total score of 53.8(SD 21.9) (see Table 3).

Following the procedure adopted in a previous study (Mu-Lan Wang et al., 2014) the PTGI scores are converted into scores out of a hundred $[(\text{mean score}/\text{possible highest score}) \times 100]$ in order to compare the values of each subscale score. The results showed that the participants presented the most positive level of PTG in the appreciation of life category (66) and the least positive in spiritual changes (37).

Attachment style

Overall, considering together the three insecure styles (Dismissing, Preoccupied, Fearful), 56.5% of the patients can be classified as insecure. These data are shown in Table 3.

Relationships between PTGI, socio-demographic and clinical variables

The dichotomic variables will hereafter be analyzed using T- test comparisons; the continuous variables by means of correlations.

As far as the relationships between the PTGI scores and socio-demographical variables are concerned, we found that age was significantly negatively correlated with the “New possibilities” subscale scores ($r = -.260, p = .007$) and “Appreciation of life” subscale scores ($r = -.214, p = .026$). No significant correlation was found between the PTGI scores and years of education. No other significant correlation between the PTGI scores and socio-demographical variables was found (see Table 4).

Table 4 about here

With regard to marital status (see Table 5), we found that there were significant differences in the PTGI levels between patients who had a partner (married; cohabiting) and those who did not (single or separated). Specifically, women with a partner presented significantly higher levels of post-traumatic growth (PTGI total score: $p < .01$), higher scores on recognition of new

possibilities ($p < .05$), interpersonal relationships ($p < .05$) and greater appreciation of life ($p < .01$) than patients without a partner.

Table 5 about here

As for the clinical variables, years since diagnosis was found to be significantly positively correlated with the “Personal strength” ($r = -.206$, $p = .032$) and “Appreciation of life” subscale scores ($r = .193$, $p = .046$). In addition, women with malign breast cancer (22) showed a significantly greater “appreciation of life” than women with benign cancer (86) (PTGI appreciation of life subscale scores: 10.4(3.6) vs. 8.4(3.6); $t(df) = -2.3(106)$; $p = .025$). Women who underwent CT presented significantly higher levels of PTG than women who underwent HT (PTGI total score: $p < .01$). In addition, the three subscales of “Relating to others” ($p < .001$), “New possibilities” ($p < .05$) and “Personal strength” ($p < .01$) were found to be significantly different between the two groups (see Table 6).

Table 6 about here

Relationships between PTG, distress and attachment style

The results showed that there were significant differences in the PTG levels between women with or without depressive symptoms (HADS_D). Depressed women showed significantly lower psychological growth (PTGI, total score: $p < .05$): specifically, they showed significantly lower positive change in the appreciation of life ($p < .05$) and recognizing new possibilities ($p < .01$) subscale scores than non-depressed women (see Table 7). No significant difference in PTGI scores was found between patients with and without anxiety (HADS_A).

Table 7 about here

We found that, of the four attachment subscale scores, only the dismissing attachment score was significantly negatively correlated with the PTGI subscale of “New possibilities” ($r = -.204$, $p = .034$). No other significant correlation was found between the PTGI and RQ scores (see Table 6). Finally, a comparison of PTGI scores was made between the two subgroups of secure and insecure attachment style patients: no significant difference was found in this case, either.

Discussion

The aim of this study was to evaluate the level of PTG and its relationship with socio-demographic, clinical and psychological variables in a sample of Italian BC survivors.

There is no evidence regarding the best period to examine PTG, and the studies presented a large variety in the choice of time. However, since PTG is usually experienced following the completion of BC treatment (Kolokotroni et al., 2014; Parikh et al., 2015), we decided to assess patients at least one year after their previous treatment.

In accordance with Mehnert and Koch (2008), we believe that any ongoing chemotherapy and/or radiotherapy- could interfere with the development of growth processes.

In our study, the average PTGI score was 53.8, which indicated moderate positive psychological changes after BC. This result was similar to that found by Leloraine and colleagues (2010), higher than that found in another study (Cormio et al., 2015) but lower than those found in others (Morris et al., 2008; Mu-Lan Wang et al., 2014). These differences may suggest that PTG can vary according to the different social and cultural backgrounds, or that they themselves may depend on the design of the study. The most positive change was achieved in “Appreciation of life” and this PTGI dimension was also positively correlated with years since diagnosis, while negatively correlated with age. Age also correlated with the PTGI dimension of “New possibilities”.

Younger women tend to show greater psychological growth, value life positively and believe in other chances. These results are in line with the literature evidencing that years since diagnosis is an important predictor of PTG (Soo and Sherman, 2015;Danhauer et al., 2013).

One important result of our study, in line with our hypothesis, is that women who underwent CT presented higher levels of PTG, specifically, in relationships with others, their personal strength and recognizing new possibilities in life. Few studies have explored the role of cancer treatment in the PTGI level, and the only ones to have done so reach inconsistent conclusions. In one recent study, PTG was found to be greater among women who received chemotherapy with respect to women who did not receive treatment (McDonough et al.,2014), while Brix and colleagues (2013) found no relationship between PTG and radiation/chemotherapy treatment. Our results suggest that women with a partner tend to show greater growth and tend to have major changes in the dimension of relationships, enjoying their life and future projects more. The presence of a “significant other” can help BC women to better cope with the traumatic event and find new meaning in life. With regard to the relationship between PTG and distress, the literature is not homogeneous. Some studies have highlighted that distress is related to PTG (Soo and Sherman, 2015),suggesting that psychological distress and PTG are not always mutually exclusive, while others have evidenced no association between PTG and distress (Cordova et al.,1995; 2007; Bellizzi et al., 2010).Our results show that there are significant differences in PTG levels between women with or without depressive symptoms (HADS_D) in the follow-up period. Depressed women showed significantly lower levels of psychological growth, lower levels of positive change in appreciation of life and in recognizing new possibilities than non-depressed women. To our knowledge, only two studies have assessed the relationship between attachment style and PTG in BC survivors. In our study, the only significant correlation was found between the dismissing attachment style and the “New possibilities” PTGI subscale. We can suggest that patients with a negative expectation of significant others as demanding tend to perceive new possibilities in the future less. We also found no significant differences in PTG

between women with or without insecure attachment. Tanyi Z. and colleagues (2015), also found a significant result on dismissing attachment style: they highlighted that this style predicted fewer scores on the “Personal Strength” and “Relating to Others” scales. Another study, however, found that insecure types of attachment were unrelated to PTG (Schmidt et al., 2011). The present study has some limits. First of all, the lack of a strong correlation between attachment and PTG in the present study, could be explained by the use of RQ, which is a more simplified scale than other attachment style measures. Secondly, the descriptive nature of the study did not allow us to in depth evaluate the relationship between the variables. In particular, a longitudinal study assessing psychological distress in the acute period just after the diagnosis, would allow to investigate its predictive value on long-term PTG and its interaction with the other variables. Finally, the high rate of patients that did not answer the phone or refuse to participate reduce the representativeness of the sample and therefore the possibility to generalize the results.

In conclusion, the most relevant result of this study is that women who had undergone CT and consequently experienced higher levels of psychological distress were found to show higher levels of PTG. One can speculate that this process, leading from acute psychological distress to long-term PTG, represents a key clinical point. Specifically, we can speculate that this process will lead to PTG only when the acute psychological distress can come to a resolution at a later time. On the contrary, the presence of depressive symptoms also in the follow-up period, could negatively interfere with psychological growth, somehow precluding its development. These conclusions can contribute to consideration of the importance of psychological intervention focusing on the acute psychological distress after cancer treatment. As far as attachment style is concerned, our result regarding its role in the development of PTG is less conclusive, and future study, possibly using more in depth instruments, is needed. Since psychological growth could become a protective mechanism in the development of negative clinical outcomes (Parikh et al., 2015), it is necessary to further investigate this relevant aspect by means of longitudinal

studies. Identifying the predictors of psychological growth could be an important key in realizing tailored psychological treatments focused on increasing the wellbeing of BC survivors.

Financial support: this study was performed without any financial or other contractual agreements that may cause conflicts of interest.

Conflicts of interest: none to declare.

Acknowledgements: the authors would like to thank Giulia La Vecchia and Giada Giorgio for their help in collecting data.

References

- Bartholomew, K. & Horowitz, L. M. (1991). Attachment styles among young adults: A test of a four category model. *Journal of Personality and Social Psychology*; 61, 226-244.
- Bellizzi, K. M. (2003). Understanding the dynamics of posttraumatic growth in breast cancer survivors. Doctoral Dissertation, University of Connecticut. Dissertation Abstracts International Section A: Humanities and Social Sciences, 64(5-A):1798.
- Bellizzi, K. M. and T. O. Blank. (2006). Predicting posttraumatic growth in breast cancer survivors. *Health Psychol.* ; 25:47–56.
- Bellizzi, K.M., Smith, A.W., Reeve, B.B. et al. (2010). Posttraumatic growth and health-related quality of life in a racially diverse cohort of breast cancer survivors. *Journal of Health Psychology*; 15 (4),615-626.
- Brix Sofie Andersen, Bidstrup Pernille Envold, Christensen Jane, et al. (2013). Post-traumatic growth among elderly women with breast cancer compared to breast cancer-free women, *Acta Oncologica*; 52:2, 345-354.
- Calhoun L.G., Tedeschi R.G. (2006). The foundation of posttraumatic growth: an expended framework. In Calhoun L.G., Tedeschi R.G. (eds). *Handbook of Posttraumatic Growth: Research and Practice*. Lawrence Erlbaum:NJ;3–23.
- Castelli L., Tonello D., D'Agata F., et al. (2013). The Neurobiological Basis of the Distress Thermometer: A PET Study in Cancer Patients, *Stress Health*.
- Cohen M. (2002). Coping and emotional distress in primary and recurrent breast cancer patients. *J Clin Psychol Med Settings*;9:245–251.
- Cordova M.J., Andrykowski M.A., Kenady D.E. et al. (1995). Frequency and correlates of posttraumatic-stress disorder-like symptoms after treatment for breast cancer. *J Consult Clin Psychol*; 63:981–986.
- Cordova M.J., Cunningham L.L., Carlson C.R., et al. (2001). Posttraumatic growth following breast cancer: a controlled comparison study. *Health Psychol*; 22:487–497.

- Cordova M.J., Giese-Davis J, Golant M., et al. (2007). Breast cancer as trauma: posttraumatic stress and post-traumatic growth. *J Clin Psychol Med Settings*;14:308–319.
- Cormio C., Romito F., Giotta F.& Mattioli V. (2015). Post-traumatic Growth in the Italian Experience of Long-term Disease-free Cancer Survivors, *Stress Health*; 31(3):189-96.
- Danhauer S.C., Case L.D., Tedeschi R., et al. (2013). Predictors of posttraumatic growth in women with breast cancer. *Psycho-oncology*;22(12):2676-83.
- Fann J.R., Thomas-Rich A.M., Katon W.J., et al. (2008). Major depression after breast cancer: a review of epidemiology and treatment. *Gen Hosp Psychiatry*;30:112–126.
- Gallagher-Ross, S. (2011). Predictors of posttraumatic growth in breast cancer survivors: An analysis of hardiness, attachment, and cognitive appraisal. PhD Dissertation, Graduate School of Education, Fordham University. *Dissertation Abstracts International: Section B: The Sciences and Engineering*; 72(7-B):4318.
- Hamama-Raz Y. and Solomon Z. (2006). Psychological adjustment of melanoma survivors: The contribution of hardiness, attachment, and cognitive appraisal. *Journal of Individual Differences*, 27,172–182.
- Hoffman B.M., Zevon M.A., D'Arrigo M.C., et al. (2004). Screening for distress in cancer patients: the NCCN rapid-screening measure. *Psycho-oncology*; 13.
- Hoover S.. (2005). Posttraumatic growth: Assessing stress-related growth in early remission breast cancer survivors. Dissertation, Graduate School of Education and Psychology, Pepperdine University. *Dissertation Abstracts International: Section B: The Sciences and Engineering*; 66(10-B):5683.
- Gizem Arian, Lusian Stopa, Katherine B. et al. (2016). The associations between adult attachment, posttraumatic symptoms, and posttraumatic growth, *Anxiety, Stress, & Coping*; 29:1, 1-20.
- Kolokotroni Philippa M.A., Anagnostopoulos Fotios & Tsikkinis Anniva M.D. (2014). Psychosocial Factors Related to Posttraumatic Growth in Breast Cancer Survivors: A Review, *Women & Health*; 54:6, 569-592.

- Lelorain, S., Bonnaud-Antignac, A., Florin A., (2010). Long term posttraumatic growth after breast cancer: prevalence, predictors and relationships with psychological health. *Journal of Clinical Psychology in Medical Settings*; 17 (1), 14e22.
- Manne, S., J. Ostroff, G. , Winkel L., Goldstein, K. Fox, and G. Grana. (2004). Posttraumatic growth after breast cancer: Patient, partner, and couple perspectives. *Psychosom Med*; 66:442–54.
- Mc Donough Meghan H., Sabiston Catherine M. and Wrosch Carsten. (2008). Predicting changes in posttraumatic growth and subjective well-being among breast cancer survivors: the role of social support and stress, *Psycho -Oncology* 2014,23: 114–120.
- Mehnert A. and Koch U. (2008). Psychological comorbidity and health-related quality of life and its association with awareness, utilization, and need for psychosocial support in a cancer register-based sample of long-term breast cancer survivors. *J Psychosom Res*, 64, 383-91.
- Mikulincer, M., Shaver, P. R., & Horse, N. (2006). Attachment bases of emotion regulation and posttraumatic adjustment. In D. K. Snyder, J. A. Simpson, & J. N. Hughes (Eds.), *Emotion regulation in families: Pathways to dysfunction and health* (pp. 77–99). Washington, DC: American Psychological Association.
- Mols, F., Vingerhoets, A. J., Coebergh, J.W. et al. (2009). Well-being, posttraumatic growth and benefit finding in long-term breast cancer survivors. *Psychology & Health*; 24 (5), 583e595.
- Morrill E.F., Brewer N.T., O'Neill S.C. et al. (2008). The interaction of post-traumatic growth and post-traumatic stress symptoms in predicting depressive symptoms and quality of life. *Psycho-oncology*; 17(9):948-53.
- Mu-Lan Wang, Jun-E Liu, Hui-Ying Wang, et al. (2014). Posttraumatic growth and associated socio-demographic and clinical factors in Chinese breast cancer survivors, *European Journal of Oncology Nursing*;18.
- Palmer S.C., Kgee A., Coyne J.C. et al. (2004). Experience of trauma, distress and posttraumatic stress disorder among breast cancer patients. *Psychosom Med*;66:258–264.

- Parikh Darshit, De Ieso Paolo, Garvey Gail et al. (2015). Post-traumatic Stress Disorder and Post-traumatic Growth in Breast Cancer Patients - a Systematic Review, *Asian Pac J Cancer Prev*, 16 (2), 641-646.
- Prati Gabriele & Pietrantonio Luca. (2014). Italian Adaptation and Confirmatory Factor Analysis of the Full and the Short Form of the Posttraumatic Growth Inventory, *Journal of Loss and Trauma*; 19:1, 12-22.
- Roth A. J., Kornblith A. B., Batel-Copel L. (1998). Rapid screening for psychological distress in men with prostate carcinoma: a pilot study. *Cancer* ; 82:1904 –1908.
- Salo, A. J., Qouta, S., & Punamaki, R. L. (2005). Adult attachment, post traumatic growth and negative emotions among former political prisoners. *Anxiety, Stress and Coping*, 18, 361–378.
- Soo H. and Sherman K. A. (2015). Rumination, psychological distress and post-traumatic growth in women diagnosed with breast cancer, *Psycho-Oncology*; 24: 70–79.
- Steven D. Schmidt, M.A., Thomas O. Blank, et al. (2011). The relationship of coping strategies, social support, and attachment style with posttraumatic growth in cancer survivors, *Journal of Health Psychology*; 17 (7) 1033–1040.
- Tanyi Z., Szluha K., Nemes L., Kovács S., Bugán A. (2015). Positive consequences of cancer: exploring relationships among posttraumatic growth, adult attachment, and quality of life, *Tumori*; 101(2):223-31.
- Tedeschi RG, Calhoun LG. (1995). *Trauma and Transformation: Growing in the Aftermath of Suffering*. Sage: Thousand Oaks, CA.
- Tedeschi R.G., Calhoun L.G. (2004). Posttraumatic growth: conceptual foundations and empirical evidence. *Psychol Inq*; 15:1–18.
- Turner-Cobb J.M., Gore-Felton C., Marouf F., et al. (2002). Coping, social support, and attachment style as psychosocial correlates of adjustment in men and women with HIV/AIDS. *Journal of Behavioral Medicine*, 25, 337–353.

- Weiss, J. Correlates of posttraumatic growth in married breast cancer survivors. (2004). *J Soc Clin Psychol.*; 23(5):733–46.
- Woodhouse S, Ayers S, Field AP. (2015).The relationship between adult attachment style and post-traumatic stress symptoms: A meta-analysis. *J Anxiety Disord.*;35:103-17.
- Wong-Kim EC, Bloom JR.(2005). Depression experienced by young women newly diagnosed with breast cancer. *Psycho-Oncology*;14:564–573.
- Zigmond A.S. & Snaith R.P.(1983).The Hospital Anxiety and Depression Scale. *Acta Psychiatrica Scandinavica*, Vol. 67(6); 361-370.

Tables

Table 1- Flow-chart. Sample Recruiting.

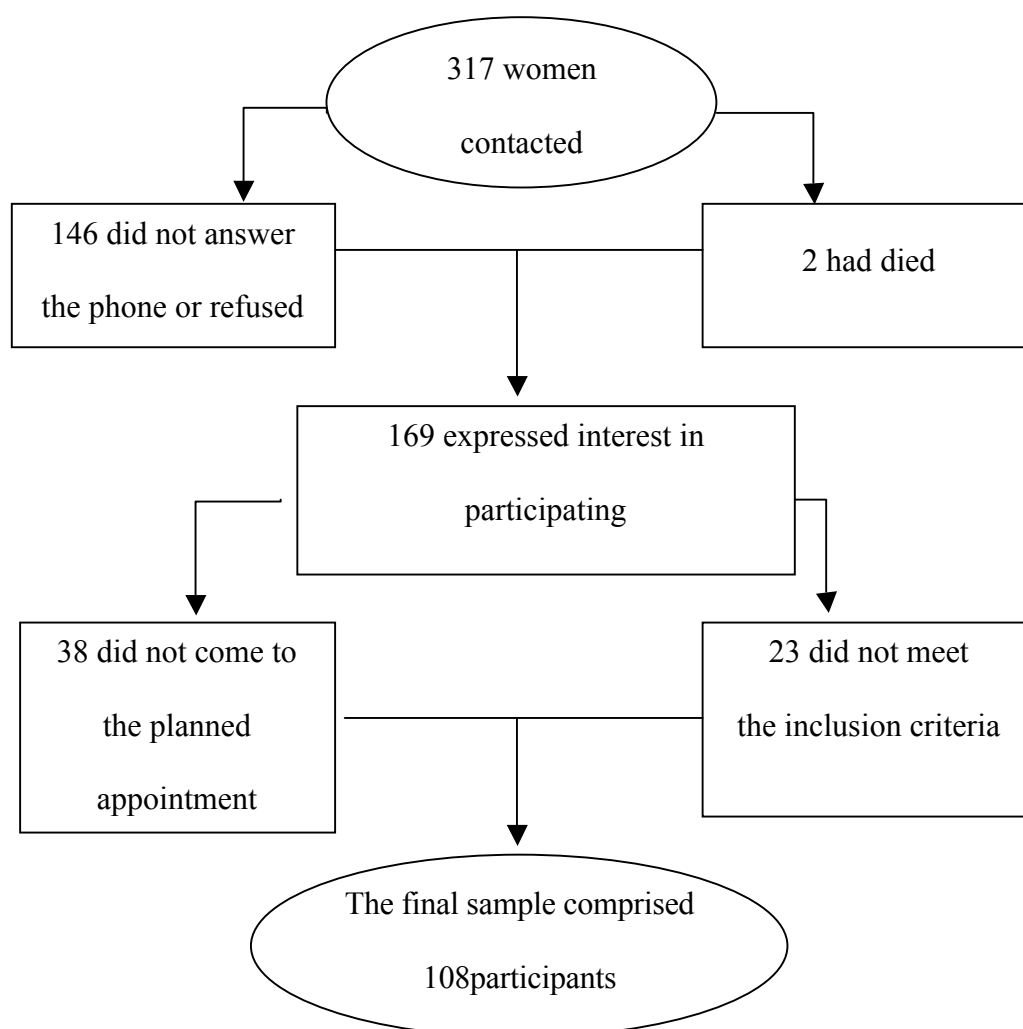


Table 2. Demographic and breast cancer-related characteristics (N=108).

Variables	Mean (SD)	Range	Frequency (percent)
Age	53.3(7.8)	40-72	
Years of education	12.1(3.8)	5-22	
Years since diagnosis	4.1(2.9)	2-16	
Marital status			
Single			12(11.1)
Cohabiting			12(11.1)
Married			73(67.6)
Separated			11(10.2)
Work status			
Employed			61(56.5)
Unemployed			25(23.1)
Retired			22 (20.4)
Cancer type			
Malign			86(79.6)
Benign			22 (20.4)
Recurrence			14(13)
Hormonal therapy			77 (53.1)
Chemotherapy			49(33.8)
Radiotherapy			68 (46.9)
Combined treatment(CT)			73(67.6)
(Hormonal, chemo-and /or radio-therapy)			
Only hormonal therapy (HT)			35(32.4)
Karnofsky	96.2(6.2)	70-100	

Table 3. Psychological variables (Distress, PTGI, Attachment style) (N=108).

Variables	Range	Mean (SD)	Frequency (percent)	Score/100
Psychological distress				
HADS depression	0-14	4.9(3.6)	28(25.9) *	
HADS anxiety	0-20	6.9(4.1)	39 (36.1) *	
DT	0-10	4.9(2.9)	73(67.6) *	
Post-traumatic growth				
Relating to others	0-34	17.5 (9)		50
New possibilities	0-25	10.8(6.3)		43.2
Personal strength	0-20	11.9 (5.3)		59.5
Spiritual change	0-10	3.7 (3.4)		37
Appreciation of life	0-15	9.9 (3.7)		66
PTGI total	0-103	53.8(21.9)		51.24
Attachment style				
Secure	0-7	4.4 (2)	47 (43.5)**	
Dismissing	0-7	4.5 (2.1)	41 (38) **	
Preoccupied	0-7	2.3 (1.6)	6 (5.6) **	
Fearful	0-7	2.7 (1.8)	14 (13) **	

* Frequency of patients over cut-off .

**Mean and SD scores are listed, as well as the percentage of patients classified in the different styles.

Table 4. Correlations between PTGI and socio-demographic, clinical and attachment style variables (n=108).

	Relating to others	New possibilities	Personal strength	Spiritual Change	Appreciation Of life	PTGI total
Age	-.039	-.260**	.054	.130	-.214*	-.094
Education	.095	.161	.098	.063	.098	.135
Years since diagnosis	.104	.176	.206*	-.003	.193*	.175
Karnofsky	.091	.130	.055	.003	.155	.115
RQ secure	.138	.103	.057	.152	.121	.144
RQ dismissing	-.094	-.204*	-.152	.001	-.038	-.140
RQ preoccupied	.108	.105	.067	.109	.152	.133
RQ fearful	.120	.145	.051	.005	.152	.130

*P <.05

**P<.01

Table 5. Comparison between patients with and without a partner on PTGI scores (n=108).

PTGI	With a partner (n=85) Mean (SD)	Without a partner (n=23) Mean (SD)	t (df)	Sign.
Relating to others	18.3 (8.7)	14.1(9.5)	-2.02(106)	.046
New possibilities	11.5(6.1)	8.1(6.1)	-2.35(106)	.020
Personal strength	12.5(5)	10.1(5.9)	-.86(106)	.387
Spiritual change	3.8(3.3)	3.1(3.6)	-1.96(106)	.053
Appreciation of life	10.6(3.3)	7.7(4.3)	-3.42(106)	.001
PTGI total	56.7(20.2)	43.1(24.7)	-2.71(106)	.008

Table 6. Comparison between patients with combined therapy (CT) and hormonal therapy (HT) on PTGI scores (n=108).

PTGI	CT (n=73) Mean (SD)	HT (n=35) Mean (SD)	t (df)	Sign.
Relating to others	19.2 (8.9)	13.8 (8.2)	-2.9(106)	.003
New possibilities	11.59 (6.4)	9 (5.6)	-2.02(106)	.046
Personal strength	12.9 (4.7)	10 (5.9)	-2.7(106)	.007
Spiritual change	4 (3.4)	2.9 (3.2)	-1.5(106)	.136
Appreciation of life	10.3(3.4)	9.31(4.2)	-1.3(106)	.198
PTGI total	58.03(21)	45.14(21.3)	-2.9(106)	.004

Table 7. Comparison between patients with and without depressive symptoms (HADS_D) on PTGI scores (n=108).

PTGI	Depressive symptoms (n=28) Mean (SD)	No depressive symptoms (n=80) Mean (SD)	t (df)	Sign.
Relating to others	15.9 (8.1)	17.9(9.3)	1.01(106)	.312
New possibilities	7.9(3.2)	11.7(6.3)	2.8(106)	.006
Personal strength	10.4(4.7)	12.5(5.3)	1.8(106)	.078
Spiritual change	2.7(2.6)	4(3.6)	1.9(65.3)	.053
Appreciation of life	8.4(3.5)	10.5(3.6)	2.6(106)	.011
PTGI total	45.6(17)	56.7(22.7)	2.4(106)	.020